1.e.
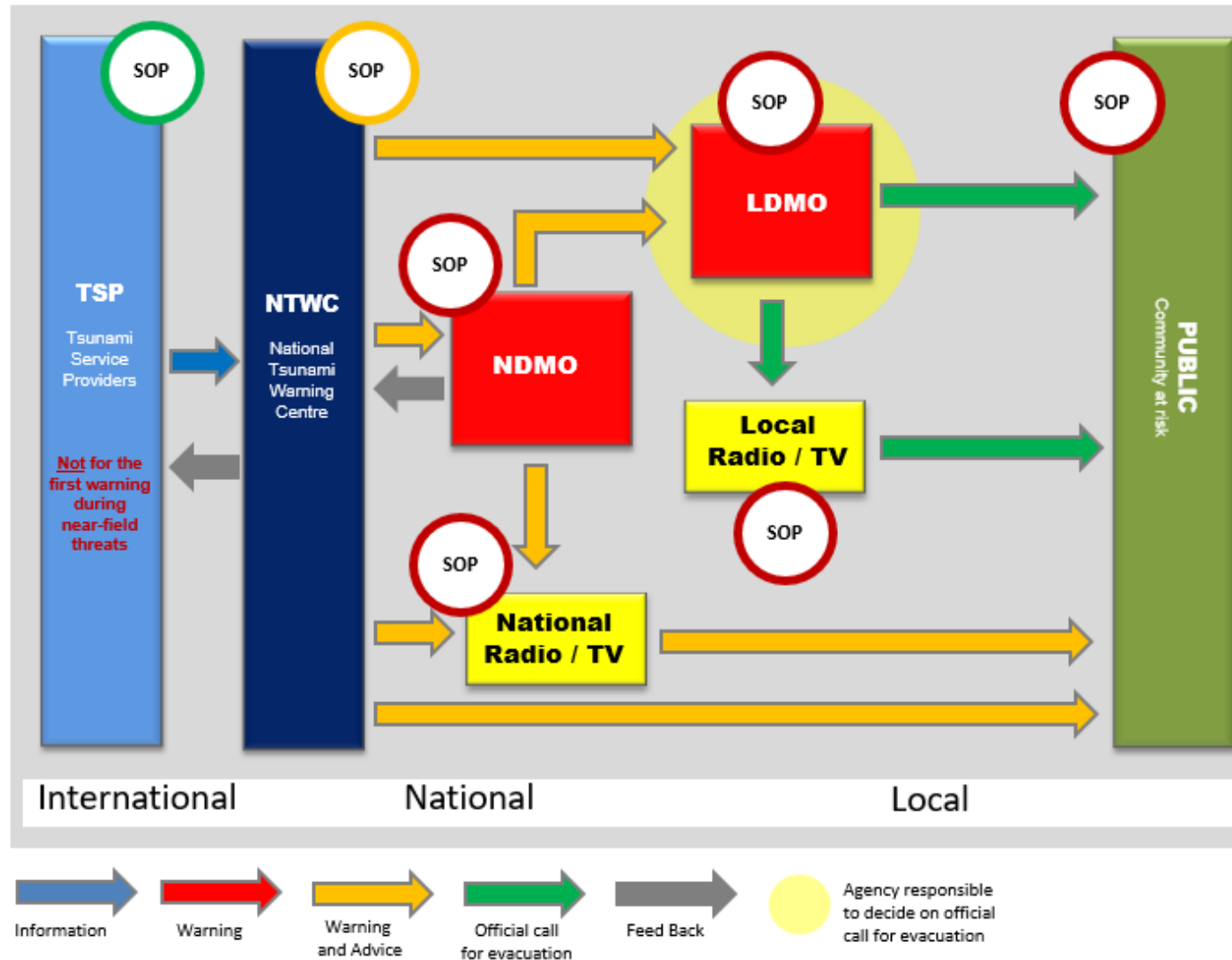# SOP Templates to Develop Roles and Responsibilities and Timelines of Processes and Actions

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Nora Gale
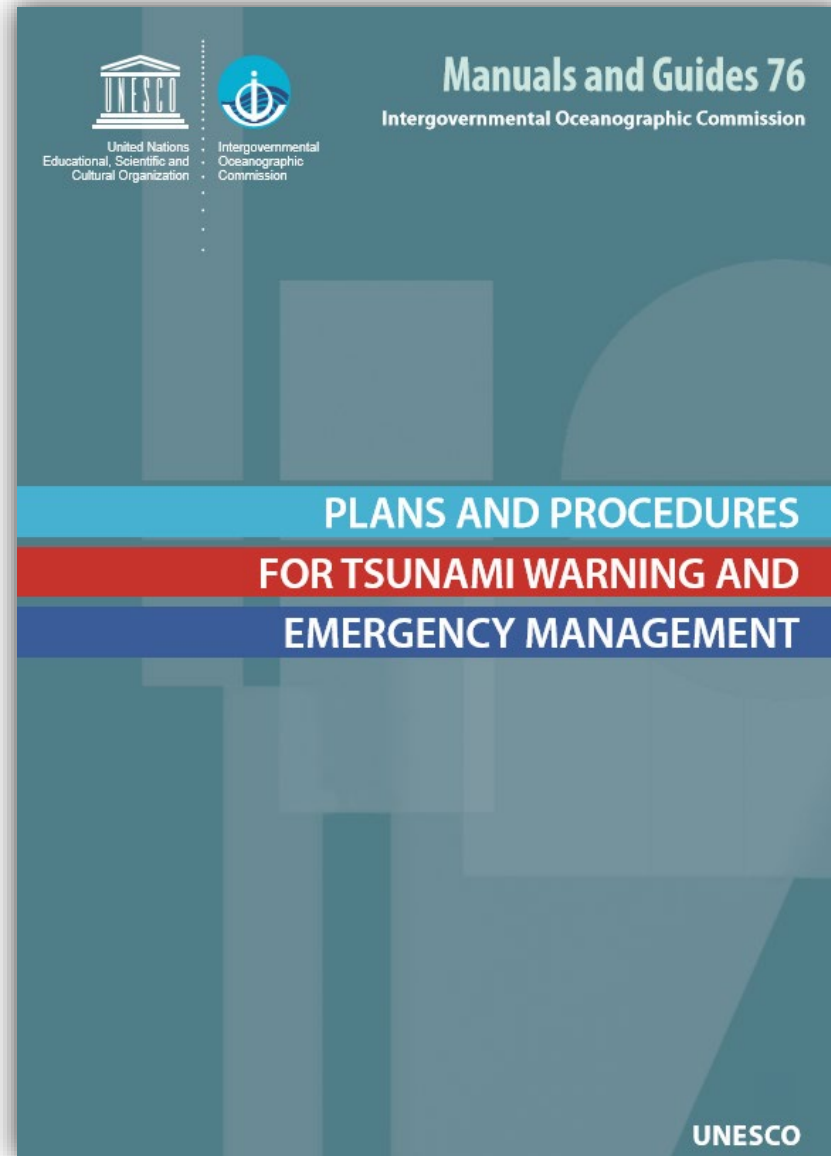*ICG IOTWMS Secretariat UNESCO-IOC*

Pre-IOWAVE25 Workshop on Standard Operating Procedures for NTWCs and DMOs
Hybrid – August 2025

The logic of institutional SOPs in the warning chain

Input			Processing	Output		

Input			Proceeding	Output		
What	From whom	How received	Processing the input, decision making and generating the output	What	To whom	How disseminated
Time in: EQ + x min			**Timeline**		Time out: EQ + x min	

Reference

www.ioc-tsunami.org

Type of Tsunami SOP

Local Tsunami

Origin   : Within minutes to 100–200 km
                  from the coast
Arrival Time   : 5–30 minutes after the earthquake
Warning Time   : Very short or none — Immediate
                  action needed

- Natural Warning (Earthquake, Volcano Eruption) is the warning

- Immediate evacuation without waiting for Official warning, sirens, or alerts

- Official Warning complementary to confirm and advice further action

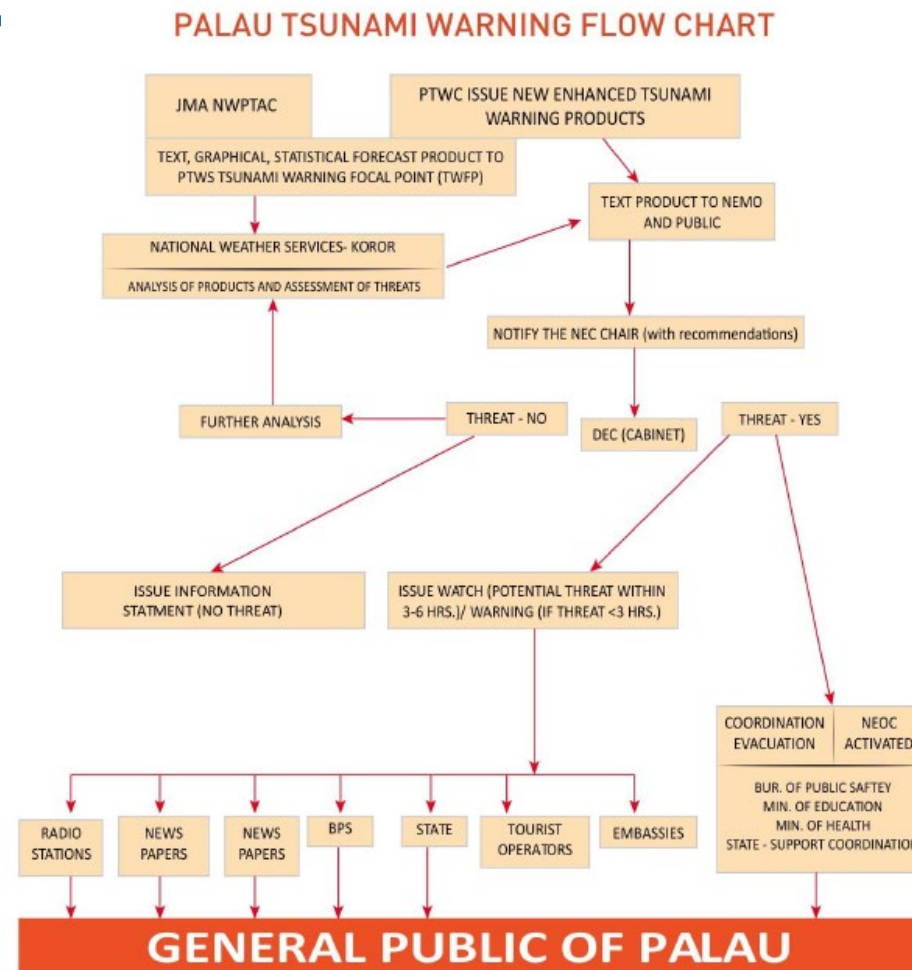## Distance Tsunami

Origin   : Thousands of kilometers away
Arrival Time   : 2–24 hours
Warning Time   : Longer – Monitored and
                  communicated officially

- Relies on official warnings via government or Tsunami Warning Centers

- Evacuation is planned and organized – more time to manage

- Communication and coordination with local disaster authorities is critical
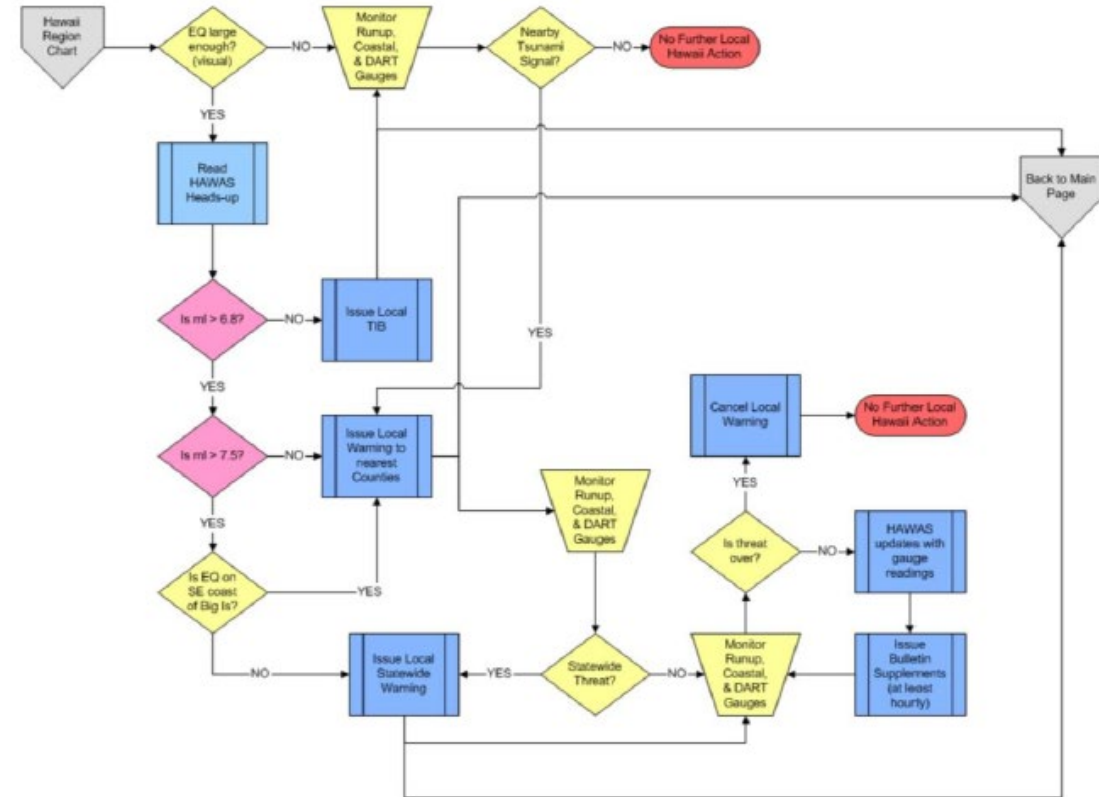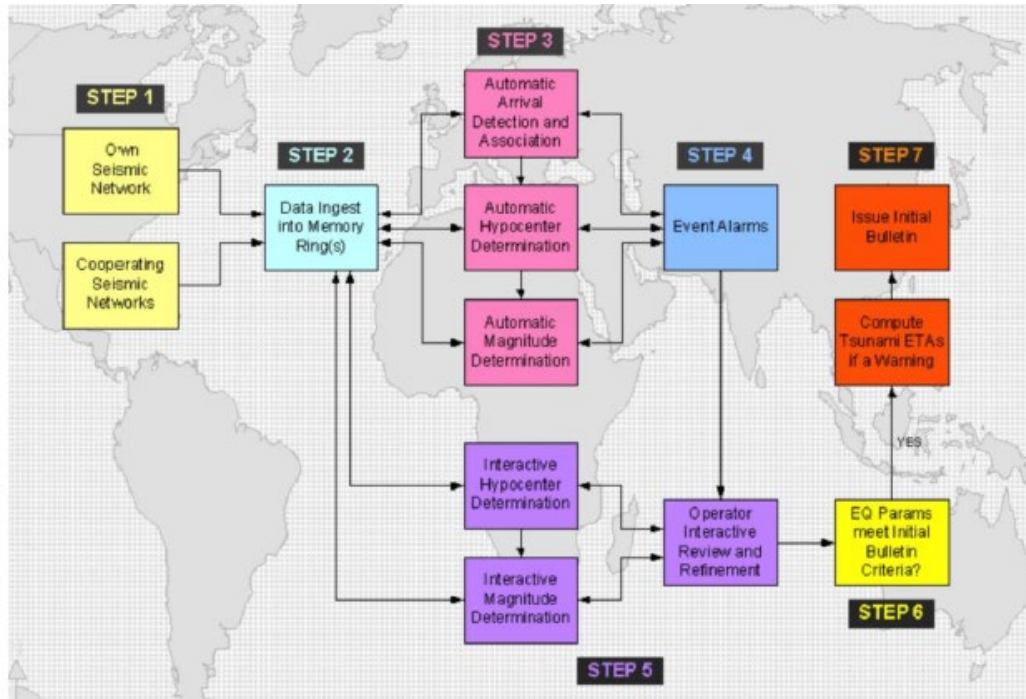
Template: FLOW CHARTS

High-level communication diagram/graphic showing the primary agencies or stakeholders or process and procedures in the warning chain. Flow charts can also depict the decision-making tree.

Flowchart can be use as the first step to develop SOP

1. Flow Chart to showing stakeholders, information, and decision process

Template: FLOW CHARTS

2. **Flow Chart showing Procedures and Process**

3. **Flow Chart showing Decision Making Process**

Template: Roles and Responsibility Matrix

No	Agency / Stakeholder	Contact Info	Role and Responsibility
1	Agency for NTWC • Centre for Earthquake and Tsunami Warning	+82 998 8888	• Monitor Earthquake and Sea Level • Receive and monitor information from TSP • Analise for tsunami threat • Issue national tsunami warning •
2	Agency for NTWC • Public Information Bureau	+ 82 894 4893	• Issue news information for the Media • Conduct media liaison •
3	Agency DMO (National) • Emergency Operation Centre		
4	Police (National) •		
5	Agency Local Disaster Management •		
6	Ministry of Social Welfare •		
7	Etc.		

Template: Emergency Response Matrix

No	Agency / Stakeholder	Warning Information	Evacuation Call	Evacuation Management	etc			
1	Centre for Earthquake and Tsunami Warning of NTWC	V						
2	Emergency Operation Centre of NDMO	V						
3	Emergency Operation Centre of LDMO (Province)	V						
4	Emergency Operation Centre of LDMO (District)	V	V	V				
5	National Police							
6	Local Police			V				
7	Search and Rescue Agency (National)							
	etc							

Template: SOP Stakeholder Role and Responsibility

Template to identify stakeholders
- Refer to the warning chain

No	Agency Stakeholder	Agency Role in TEWS	Product / output / Information	Responsible Person / Unit and contact	Linkage
•	National Tsunami Warning Centre	Provide warning based on threat level	Bulletin messages	Operation Center	• Disaster Management Office • Media • … • …

Template: SOP Local Tsunami

A step-by-step SOP templates for Local (near-field) tsunamis incorporate target time-lines for execution of the various stages of the response procedures.

Step	Time Since EQ	What Activity	Action to be taken / done	Who is Responsible	Time How long to process	Note Checklist
1	0–1 min	Safety measures	**Earthquake felt**: Drop, Cover, Hold	Everyone	0–1 min	

Template: SOP Distant Tsunami

A step-by-step SOP templates for Distant (far-field) tsunamis incorporate target time-lines for execution of the various stages of the response procedures.

Step	Time Since Notification	What Activity	Action to be taken / done	Who is Responsible	Time How long to process	Note Checklist
1	0–1 min	Notification from TSP	• **Received information from TSP** • **Analyse threat of TSP information to country**	On Duty Officer and Supervisor	1 min	TSP Buletin checklist

Example: SOP Template

STEP	TIME since EQ*	ACTIVITY	ACTION AND PROCEDURES	WHO IS RESPONSIBLE	TIME TO PROCESS	NOTE / CHECKLIST
1	01 min	Seismic Alarm Trigger	• Alarm sound from an automatic seismic processing system • Monitor RTED/CISN and other information tools • Receive Information provided by TSP/other Centres	• On Duty Officers • On Duty Supervisor	• 1 - 2 minutes	
2	03 min	Earthquake Monitoring and Analysis, Tsunami monitoring	• Obtain ETA by look up in TSP Message • Review/update automatic phase picks and solution. Perform Interactive analysis if required. Highest priority for review is earthquake magnitude and focal depth • Calculate tsunami travel times/ETA to nearest international sea level stations and country • If ETA to country is within the predefined time, go to step 3. • Monitor sea level stations near the epicentre • If there is enough time, NTWC shall issue Information that event is under assessment for tsunami threat to the country. (If no tsunami is observed in the near source region, Information is issued that there is no tsunami threat.)	• On Duty Officers • On Duty Supervisor	• 1 minutes	

3	04 min	Tsunami Threat Assessment	• Obtain threat by look up in TSP Message
			• Estimate Threat by
			  ○ Tsunami Scenario Database look up
			  ○ Real-time Tsunami Forecast modeling
			  ○ Earthquake location, depth, magnitude as proxy for tsunami threat height and area.
				• On Duty Officers
				• On Duty Supervisor
					• 1 - 3 minutes	

4	07 min to hours	**Issuance of warning and related information**	• **Use Country Criteria Table to decide on Alert Level. If warning thresholds (for earthquake magnitude or expected tsunami amplitude) are exceeded, issue warning to tsunami-threatened areas immediately. For warning, issue ETAs at forecast points.** • **If very distant, advise and wait until threat closer for warning.**	• **On Duty Officers** • **On Duty Supervisor**	• 1 - 2 minutes	

Template: Checklist

Quick-reference checklist SOPs, sometimes referred to as 'cheat sheets', assist on duty officer to efficiently carrying out the steps required to do the task based on the SOP. Checklists are especially useful to ensure that steps are not forgotten during the fast response required for tsunami warning.

NTWC Checklist for Initial Message (simplified)

Locate epicentre. Examine location map... ☐
Review automated solution. Re-pick phases if needed and relocate to finalize .... ☐
Determine depth .... ☐
Determine magnitude (Mwp) .... ☐
Issue Earthquake Information Message (has no tsunami information) .... ☐
Compare solutions from other NTWCs (CISN, USGS, other countries) .... ☐
Select Message Type using Criteria Table .... ☐
Call in other watch-standers to help (if a Warning)... ☐
Compute ETAs and TTT map (TTT) .... ☐
Run Message Software to create message .... ☐
Before sending messages, check:
Message Number (should be 1) .... ☐
　Message Type (Warning, Advisory, Watch, Information, etc.) .... ☐
　Which locations placed in Warning/Advisory status .... ☐
　Customized information for unusual or unique situations, if needed.......................... ☐
　Earthquake parameters (hypocentre, magnitude, geographic name location) .... ☐
　Estimated Tsunami Arrival Times (ETAs)... ☐
Send Message .... ☐

Other Template(s)

- Bulletin Template / Message Template
  - 1, 2, 3, 3.1 ~ n, 4.
- Media Information Template
  - New Flash
  - Media Briefing
- Decision making Template
- Etc.